

T02-062A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:)	
SERKH, Alexander)	
)	Examiner: Johnson, Vicky A.
Serial No.: 10/664,443)	
)	Group Art Unit: 3682
Docket No.: T02-062A)	
)	
For: BELT TENSIONER)	

Declaration under 37 C.F.R. §1.132

I, Alexander "Sasha" Serkh, residing at 316 Falling Brook Drive, Troy Michigan, the sole inventor of the subject matter of U.S Patent Application Serial No. 10/664,443, filed September 9, 2003, entitled "Belt Tensioner" and claiming priority to U.S. Provisional Application Serial No. 60/412,471, filed September 20, 2002, hereby declare:

I am a mechanical engineer, in the employ of the Gates Corporation as an Advanced Product Engineering Manager. I received my MSME degree from the Moscow Automobile Construction Institute, in Automotive Engineering in 1983; and a Ph.D. in 1987 from the same institute. I was a Patent Examiner in the Russian Patent Office from 1983 to 1991. I have worked in the field of power transmission belts and belt tensioners for 12 years and I am an inventor in at least 23 U.S. patents and numerous counterpart foreign patents related to the tensioning of power transmission belts and the like. Also, I hold 68 Russian patents in the field of power transmission, energy storage devices, and flywheels, and one Bulgarian patent on a super flywheel. I lead belt tensioner development for the Gates Corporation for at least 10 years. Gates' tensioner technology is recognized to be superior by our customers. Since the first introduction of a balanced tensioners invented by me in 1997 Gates Corporation has produced more than thirty million units to date in North America, Europe, and Asia. For at least the foregoing reasons, I respectively assert that I am an expert in at least the field of power transmission belt tensioners.

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I have reviewed Schmid, U.S. Patent Number 6,039,664 (hereinafter *Schmid*), as well as re-reviewing claims 1-11 of U. S. Patent Application Serial Number 10/664,443, the subject matter of which I am the sole inventor. I have also reviewed a copy of the USPTO Office Action mailed on June 6, 2005, finally rejecting the claims 1-3 and 5-11 of U. S. Patent Application Serial Number 10/664,443 as anticipated by *Schmid*. In referring to *Schmid*, the Office Action alleges: "It is inherent that the forces of the strut would balance out the forces of the pulley, because as the belt applies more force against the pulley the strut would apply an equal opposite force in order to keep tension on the belt. The forces of the pulley and the strut have to pass through the pivot bearing and balance in order to keep the appropriate tension on the belt." Further, the Office Action states: "It is inherent that the torque loss would be balanced as in the claimed invention since the two inventions are almost identical in structure." Upon this review I have determined the following:

- 1) *Schmid* discloses a power transmission belt tensioner.
- 2) One of ordinary skill in the art might read *Schmid* as disclosing a power transmission belt tensioner of the type having a pulley adapted to communicate with a surface of a power transmission belt, an arm supporting the pulley upon which the pulley is rotatably mounted via a pulley bearing, a shaft supporting the arm, the shaft rotatably supported by a pivot bearing, an attachment point for a strut, and the strut attached to the attachment point, wherein the pulley and the attachment point laterally offset in relation to the pivot bearing.
- 3) However, one of ordinary skill in the art would not find that the tensioner arrangement of *Schmid* would necessarily possess the characteristic of being substantially balanced in terms of parasitic torque across its pivot bearing(s). More specifically, *Schmid* fails to teach or suggest balancing a pulley, attachment point and pivot bearing in terms of parasitic torque across the pivot bearing by arranging the a pulley, attachment point and pivot bearing such that a balance line that might be inferred as passing through the through an axis of the strut

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attachment point and a center of the tensioner pulley would intersect the pivot shaft, much less intersect the pivot shaft within a lateral limit of the pivot bearing(s). Such an implementation of the invention of claim 1 is taught as a means to balance the a pulley, strut attachment point and pivot bearing in terms of parasitic torque by the specification of patent application serial number 10/664,443. Review of Figure 1 of *Schmid* makes clear that a balance line cannot pass through the axis of the strut attachment point, a center of the tensioner pulley and the pivot shaft of *Schmid*, as the a plane containing the pulley axis and the pivot axis is perpendicular to a plane containing the pivot axis and the attachment point. As pointed out in the specification of patent application serial number 10/664,443 the attachment point for the strut of *Schmid* remains substantially in the plane at the center of rotation of the pivot bearing. It is readily apparent that, when the tensioner of *Schmid* is placed into operation, the forces acting upon the tensioner by the belt and the strut give rise to an unbalanced load across the pivot bearing causing parasitic torque, which tends to force the pivot shaft to axially misalign with the bearing. This would be true whether the strut is providing the biasing force for the tensioner or only modifying the biasing force through damping. Thus, *Schmid* fails to teach or suggest, nor does *Schmid* necessarily possess the characteristic of balancing a pulley, strut attachment point and pivot bearing in terms of parasitic torque across the pivot bearing.

I further declare that I have reviewed Mutoh, U.S. Patent Number 4,838,840 (the U.S. counterpart of German Patent Number DE 38099169) (hereinafter *Mutoh*), as well as re-reviewing claims 12-22 of U. S. Patent Application Serial Number 10/664,443, the subject matter of which I am the sole inventor. I have also reviewed a copy of the USPTO Office Action mailed on June 6, 2005, finally rejecting the claims 12-14 and 16-22 of U. S. Patent Application Serial Number 10/664,443 as anticipated by *Mutoh*. In refereeing to *Mutoh*, the Office Action alleges: "It is inherent that the forces of the strut would balance out the forces of the pulley, because as the belt applies more force against the pulley the strut would apply an equal opposite force in order to keep tension on the belt. The forces of the pulley and the strut have to pass through the pivot bearing and balance

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in order to keep the appropriate tension on the belt." Upon this review I have determined the following:

- 1) *Mutoh* discloses a power transmission belt tensioner.
- 2) One of ordinary skill in the art might read *Mutoh* as disclosing a power transmission belt tensioner of the type having a pulley adapted to communicate with a surface of a power transmission belt, an arm supporting the pulley upon which the pulley is rotatably mounted via a pulley bearing, a shaft supporting the arm, the shaft rotatably supported by a pivot bearing, an attachment point for a strut, and the strut attached to the attachment point, wherein the pulley and the attachment point laterally offset in relation to the pivot bearing, at least slightly.
- 3) However, one of ordinary skill in the art would not find that the tensioner arrangement of *Mutoh* would necessarily possess the characteristic of being substantially balanced in terms of parasitic torque across its pivot bearing(s), nor would these characteristics necessarily flow from the teachings of *Mutoh*. More specifically, *Mutoh* fails to teach or suggest balancing a pulley, attachment point and pivot bearing in terms of parasitic torque across the pivot bearing by arranging the a pulley, attachment point and pivot bearing such that a balance line that might be inferred as passing through an axis of the strut contact point of *Mutoh* and a center of the tensioner pulley would intersect the pivot shaft, much less intersect the pivot shaft within a lateral limit of the pivot bearing(s). See Figure 2 of *Mutoh*. Review of Figure 2 of *Mutoh* makes clear that a balance line cannot pass through the axis of the strut attachment point, a center of the tensioner pulley and the pivot shaft of *Mutoh*, as the a plane containing the pulley axis and the pivot axis is perpendicular to a plane containing the pivot axis and the attachment point. Thus, *Mutoh* fails to teach or suggest balancing a pulley, strut attachment point and pivot bearing in terms of parasitic torque across the pivot bearing. Nor are these characteristics necessarily possessed by *Mutoh* or do they necessarily flow from the teachings of *Mutoh*.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Alexander SerkhDate: 3/14/2006